SOME EARLY STAGES OF *CALOCHRYSA* BANKS (NEUROPTERA, CHRYSOPIDAE)

By T. R. New
Dept. Zoology, La Trobe University, Bundoora, Vic. 3083

Abstract

Features of the egg, oviruptor and first instar larva of *Calochrysa extranea* (Esben-Petersen) are described. These stages indicate a close relationship between *Calochrysa* and *Italochrysa*, and confirm placement of the former in the Italochrysini.

Introduction

Calochrysa Banks is one of the few chrysopid genera believed to be endemic to Australia, where it is widely distributed (New, 1980). The genus includes only the type species, *C. extranea* (Esben-Petersen), and was allocated by Brooks (1984) to the tribe Italochrysini. Nothing has hitherto been reported on its early stages or biology and, in view of the increasing realisation of the importance of features of the immature stages for assessing relationships within the Chrysopidae, the egg, oviruptor and first instar larva are described in this note. The sparse material available consists of only one egg and its issue, and represents the sole output of a female adult captured at light in March 1985. The female was one of two taken at Hurstbridge, Victoria, representing a considerable extension of the known distribution of *Calochrysa* into the southeast of Australia.

The only other information available on early stages of Italochrysini is limited to the genus *Italochrysa* Principi (Principi 1946, New 1983).

Measurements are given in millimetres, and drawings are from slide-mounted material.

Calochrysa extranea (Esben-Petersen)

(Figs 1-9)

For synonymy see New (1980: 30).

Egg.—Elongate, tapered to narrow apex with prominent micropyle, laid on simple stalk; very fine areolate sculpturing visible under high magnification. Length 1.50, breadth 0.68, stalk 5.7. Pale bluish breen, changing to grey before hatching.

Oviruptor (Fig. 2).—Moderately sclerotised; a prominent rounded and slightly rugose anterior lobe; posterior elongate blade with incipient acute teeth.

First Instar (Figs 1, 3-9).—Body length, excluding mouthparts, 2.0; greatest head width 0.45. Very pale, with part of vertex slightly browned as in Fig. 1; abdomen predominantly colourless, setae pale. Strongly humped, with head partially retracted. Head appendages short; palpi (Fig. 4) medially convergent, about as long as mandibles, preapical segment with three or four setae, apical segment narrow and tapered with few fine setae at tip; mandibles and maxillae basally stout and strongly curved, short; apex of mandible (Fig. 5) slender and incipiently serrate on inner edge; apex of maxilla (Fig. 6) narrowly

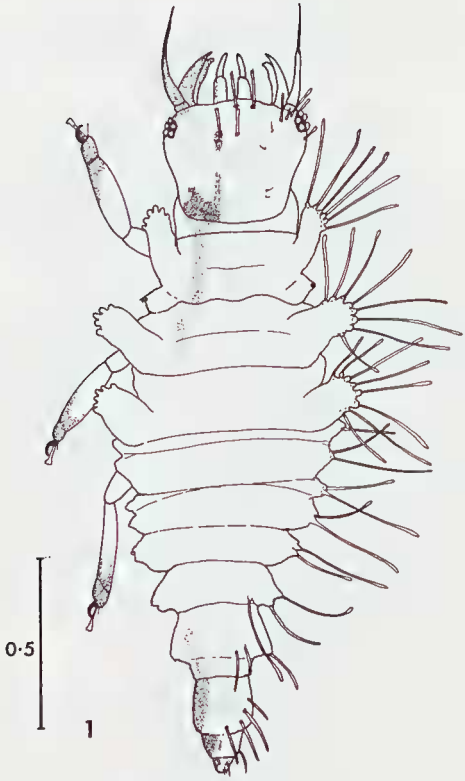
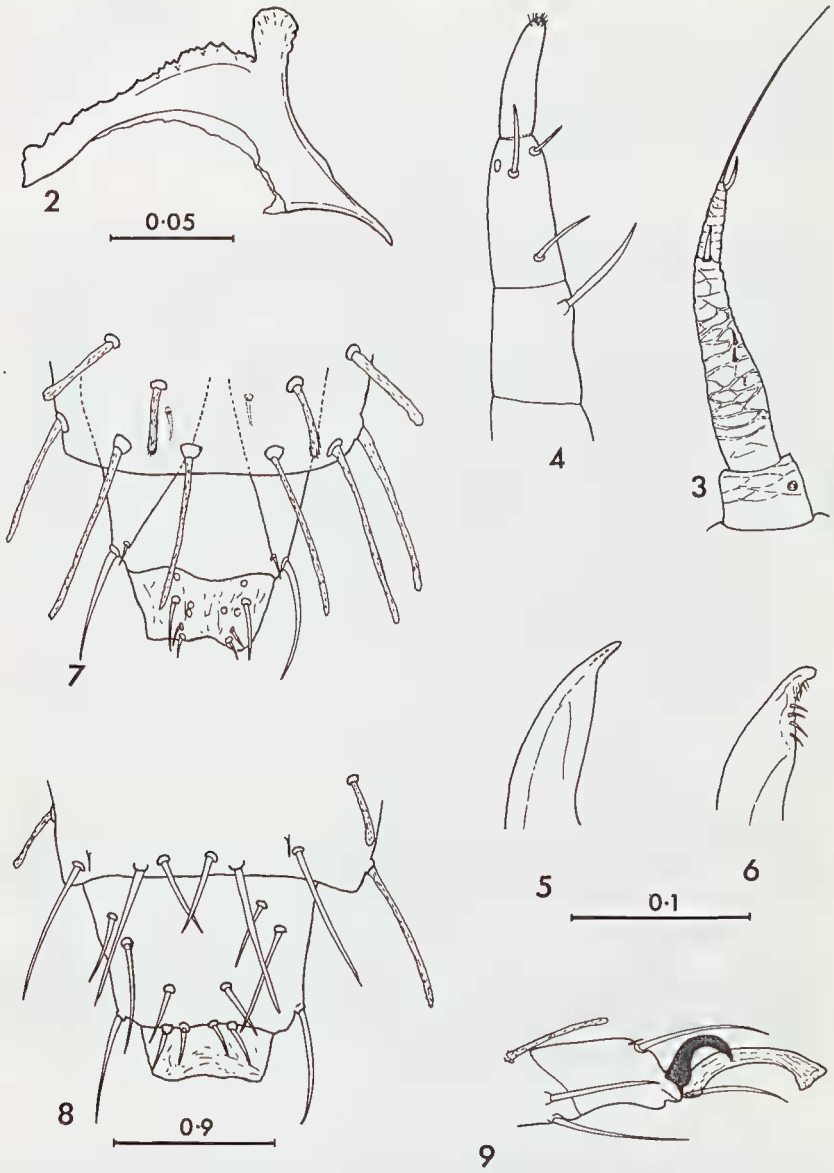


Fig. 1. *Calochrysa extranea* (Esben-Petersen): first instar larva, dorsal aspect (setae omitted from left side, legs and pigmentation omitted from right side, scale in mm).

blunt, with about four short setae and fine filaments beyond these. Antenna (Fig. 3) strongly tapered, about 1.3 times mandible length and about equal to medial head length; a long terminal filament with one seta at base of this and another, more basal, seta; irregular reticulate sculpturing. Dorsal labral margin of head with four long, blunt, slightly ridged setae; two or three shorter blunt setae anterior to each eye, and one blunt marginal seta behind each eye; a long blunt seta on vertex behind each medial labral seta; three or four minute pointed setae approximately in line along vertex behind inner mandible base. Eyes in black surround.

Thoracic segments each with well-developed and dorsally-reflexed lateral lobe, each lobe bearing six to eight long blunt setae arising from separate basal tubercles. Abdominal segments I-VII each with tapered lateral lobe bearing two or (VI, VII) three similar setae, one being conspicuously longer than the other on segments I-V. Other conspicuous dorsal setae absent, but dorsum of thorax and abdomen I-VI with dense vestiture of long slender filaments,



Figs 2-9. *Calochrysa extranea* (Esben-Petersen): (2) oviruptor; (3-9, first instar) (3) antenna; (4) labial palp; (5) apex of mandible; (6) apex of maxilla; (7) abdominal apex, dorsal aspect; (8) abdominal apex, ventral aspect; (9) hind tarsus, claw and empodium. (Scales in mm; 3-6, 9 to common scale; 7, 8 to common scale.)

some of them hooked (not shown in Fig. 1). Apex of abdomen as in Figs 7, 8: dorsal setae predominantly blunt and ornamented, ventral setae predominantly tapered. Legs with setae slightly ornamented; claw strongly arched; empodium long (Fig. 9).

Material Examined.—Victoria, Hurstbridge, 1 egg ex female at light 16.iii.1985; hatched after 6 days under uncontrolled conditions.

Discussion

The insect described above bears an extraordinary resemblance to the corresponding stages of *Italochrysa insignis* (Walker) (New, 1983), and strongly supports Brooks' (1984) alliance of the two genera. The anterior process of the oviruptor is longer and more rounded in *Calochrysa* than in *Italochrysa*, but the whole structure is clearly of the same general pattern. It differs substantially from the oviruptors of other Chrysopinae which have been described in having the anterior process considerably enlarged.

The first instar larvae of the two genera share the following features of likely phylogenetic value in defining larvae of the tribe Italochrysini:—

i. Debris-carrying, with strongly developed dorsal entangling vestiture.
ii. Short body, with abdomen strongly humped and head partially retracted into prothorax.
iii. Jaws and palpi very short.
iv. Dorsal thoracic plates not developed.
v. Dorsal labral margin of head with few blunt setae; posterior half of head with no long setae.
vi. Pronounced thoracic lobes on all segments, each with few long setae.
vii. Anterior abdominal segments with lateral lobes each bearing two or three long setae, these not hooked.

The main differences between the larvae are rather trivial: all major setae of *Calochrysa* are relatively shorter than those of *Italochrysa*, and there are minor differences in cranial seta pattern. Perhaps more notably, the major lateral setae of *Calochrysa* are bluntly rounded rather than tapered.

The larva became coated with debris soon after eclosion. It was provided with various *Eucalyptus* psyllids and scale insects and, although it was seen to probe these, died within about a week. It is possible, in view of the close resemblance to *Italochrysa*, that it may have a similarly-specialised larval life in close association with ants (Principi, 1946).

References

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